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Descriptions of New Species of North American Neuropteroid Insects.

BY NATHAN BANKS.

In the following pages besides the descriptions of various new species of our Neuropteroid insects are synoptic tables of several genera, particularly of *Raphidia* and *Rhyacophila*. That of *Raphidia* is preliminary to a revision of our species of the family which is so abundantly represented in the western parts of our country. Of the two new genera of caddice flies, *Phanopsyche* is very peculiar on account of the venation of the hind wing, in which two veins are united for a considerable distance.

PERLIDÆ.

***Perla slossonæ* n. sp.**

Head yellow with a large, median, dull black spot over ocelli and scars, and down to the clypeus; ocelli small, posterior ones wide apart, fully as near to eyes as to each other, the basal two joints of the antennæ black, then yellow, beyond dusky; pronotum very short and broad, anterior and posterior margins convex, dull black, a broad median pale stripe, thorax and abdomen black, somewhat shining, dull, and finely haired below; setæ nearly as long as abdomen, dull black, knees pale. Wings rather short, faintly dusky, venation black, except basal part of hind wings, radial sector usually with two branches beyond the anastomosis. In male the dark head-mark includes a pale spot between the posterior ocelli, and a transverse pale mark in front of the anterior ocellus. In the male the penultimate ventral segment of abdomen is slightly produced in a yellow median lobe; the ventral plate of female is very broad and evenly convex on top.

Expanse 26 mm.

From Franconia, N. H. (Mrs. Slosson).

***Isoperla bellona* n. sp.**

Pale dirty yellow, brownish or black in the ocellar region, sometimes not plainly marked; antennæ except basal fourth dark, pronotum marked with black on the rugæ each side, and on front and hind margin, rest of thorax pale, with a dark spot each side on front of mesonotum; abdomen yellowish brown; legs and setæ pale, tarsi and tips of setæ dark; wings faintly brownish yellow, venation brown. Anterior ocellus barely nearer to hind ocelli than those to each other, and

these as far from eyes as from each other ; pronotum nearly twice as broad as long, sides straight, subparallel, hind angles square, hind and front margin both slightly arcuate ; joints of setæ not very long.

Expanse 20-22 mm.

From Black Mountain, North Carolina, May, It varies much in depth of coloration.

***Alloperla nanina* n. sp.**

Pale yellowish ; antennæ, except pale base, is dark brownish ; pronotum brown, except the pale margins ; dorsum of thorax and abdomen brown ; setæ and legs pale ; wings pale yellowish hyaline, venation entirely pale. Anterior ocellus as near to antennæ as to the posterior ocelli, and a little nearer to them than they to each other. Pronotum narrower than head, one and a half times broader than long, truncate in front, sides slightly convex, hind angles broadly rounded. Wings with fork of radial sector about one and a half times as long as pedicel, only about two or three cubital and median cross-veins.

Expanse 16 mm.

From Black Mountain, North Carolina, north fork of the Swannanoa River, May. Easily known by the dark pronotum and small size, the smallest so far known in the genus.

***Alloperla continua* n. sp.**

Pale yellowish, a dark median stripe on pronotum and continued more or less plainly on the vertex of head between ocelli, posterior margin of scutelli black, a median black streak on abdomen above ; the antennæ beyond middle blackish, wings with pale venation. Anterior ocellus nearly as far from the posterior ocelli as they from each other, and these as near to each other as to eyes ; pronotum nearly twice as long as broad, but little rounded in front, sides and hind angles broadly rounded, each side of disc rugose ; setæ short. Wings rather long, fork of radial sector more than twice as long as pedicel, this and the anastomosis darker than other veins, four or five median cross-veins.

Expanse 18-21 mm.

From San Gabriel Mountains, California, 3000 feet, 17 June (Grinnell) ; Pasadena, California, 19 June (Grinnell), and mountains near Claremont, California (Baker).

***Alloperla mediana* n. sp.**

Pale yellowish ; antennæ blackish beyond basal third, palpi marked with black ; pronotum with a median black streak more or less distinct, sometimes quite wide, sometimes with only a median line and one or two ridges near by marked with black ; the posterior margin of

the scutelli black, a median black stripe on dorsum of abdomen; tip of tarsi black, and a faint mark on knees. Wings pale, venation pale, except rather darker beyond middle. Anterior ocellus not much nearer to posterior ocelli than they to each other, and these a little farther apart than from the eyes; pronotum very broad, about elliptical, the anterior margin a little rounded, the sides and hind angles broadly rounded; setæ very short; wings rather long, the fork of radial sector usually not twice as long as pedicel, about four median cross-veins.

Expanse 18 to 20 mm.

From Black Mountain, north fork of the Swannanoa River, North Carolina, May; also Gloversville, N. Y., 13 June (Alexander).

***Alloperla lateralis* n. sp.**

Pale yellowish; antennæ black beyond middle, palpi dark; pronotum with black margin all around; abdomen pale, a median black streak on dorsum; setæ and legs pale, tarsi dark; wings hyaline, venation pale, but the cubital and its branches, the anastomosis, and the radial sector beyond it usually dark. Anterior ocellus much smaller than posterior ocelli, and much nearer to them than they to each other, which is about their distance from the eyes; pronotum twice as broad as long, truncate in front, posterior corners very broadly rounded, each side rugose on the disc; setæ very short. Wings rather long, fork of radial sector nearly twice as long as its pedicel; about four or five median cross-veins.

Expanse 18 to 22 mm.

From Black Mountain, north fork of the Swannanoa River, North Carolina, May; and Gloversville, N. Y., June (Alexander).

***Nemura venusta* n. sp.**

Yellowish brown; antennæ nearly black; femora dark at tip; tibiæ at base and tip, and all tarsi blackish. Fore wing a uniform deep brown, with about 35 large, clear, whitish rounded spots in the cells, disposed rather regularly over the surface, but none in basal costal area and few indistinct in anal area; hind wings uniform dusky brown. Head finely hairy; ocelli much nearer to eyes than to each other; antennæ very long and slender; pronotum nearly square, posterior angles sharp, strongly rugose above on each side. Wings moderately long, about six median and five cubital cross-veins.

Length 9 mm.

From Huachuca Mountains, Arizona (Osler). Readily known by the spotted wings.

RAPHIDIDÆ.

Raphidia arizonica n. sp.

Head blackish green, with usual reddish streaks; basal joint of antennæ dark, beyond pale for about one-third way out, then black; pronotum dark, yellow on sides, pale reddish on anterior one-fourth, behind with three reddish streaks; rest of thorax black, a pale spot on middle lobe of mesonotum, and on metascutellum; abdomen greenish black, hind borders of segments narrowly yellow, last ventral in both sexes mostly pale; legs pale. Wings with black veins except at extreme base, where they are yellow, stigma yellowish brown, moderately long, nearly as long as first cell below, four cells below. Head not very elongate; the male has upper piece of genitalia with a projection at lower tip; in female the last ventral segment is slightly produced in the middle.

Expanse 25 mill.

From Phoenix, Arizona (Osler).

The shape of male genitalia is characteristic, and the mostly dark pronotum will often separate it.

Raphidia distincta n. sp.

Greenish black; a median, reddish stripe behind on vertex, lateral stripes not distinct; basal joint of antennæ a little dark, beyond pale, and then dark again; pronotum paler on anterior fourth; thorax unspotted; abdominal segments very narrowly paler behind; legs pale, hind femora brown or black. Wings with black veins, stigma dark brown. Head rather short, diamond-shaped, pronotum narrow, as long as head. Wings rather short, subcosta ending only a little beyond middle, four hyaline spots on veins, one being in middle of hind edge of the second cell under stigma, only three of these cells; the stigma is very peculiar, it is short, broadened behind, and reaches beyond the cell below it to the upper edge of the vein from the tip of the cell. Last ventral segment of female truncate; male appendages as figured and very characteristic.

Expanse 14-16 mm.

From Mt. Pinos, Kern County, Saw Mill Cañon, Kern County, and San Gabriel Mountains, Los Angeles County, all California, and taken by Mr. Fordyce Grinnell in June.

Raphidia astuta n. sp.

Basal joint of antennæ pale; hardly any pale in front of antennæ; vertex with usual pale stripes; pronotum pale in front, behind with streaks like those of *R. adnixa*; abdomen black, venter pale; legs pale. Wings rather slender, four (or sometimes five) cells under the stigma, which is rather long, and unicolorous pale yellowish; the

lower genital plates of male meet on the median line (as in *admixa*), but seen from the side they are more rounded outward and less sloping than in that species; the upper male appendages taper toward the tip. The posterior sides of the head are less rounded than in *R. admixa*.

Expanse 23-26 mm.

From Pasadena, 31 May, 29 June; San Gabriel Mountains, 17 June, Mt. Wilson, 5 June, all from Southern California (Grinnell).

Our species of *Raphidia* can be tabulated as follows:

1. Besides the usual three white dots on veins of fore wings there is a fourth situate on middle of posterior side of the second cell below stigma; bristles of veins very short; only three cells under stigma.....2.
Only the usual three white dots on veins; bristles of veins plainly visible3.
2. Stigma reaching one-half beyond the cell below it.....**distincta**.
Stigma not reaching beyond the cell below it.....**minuta**.
3. Basal joint of antennæ as pale yellow as the second joint.....4.
Basal joint of antennæ dark.....6.
4. Five cells under stigma; large species; last ventral of female slightly prolonged; stigma very long.....**assimilis**.
Four cells under stigma, small species.....5.
5. Head pale in front of antennæ; superior male appendage truncate.
admixa.
Head barely paler in front; superior male appendage sloping to the tip.....**astuta**.
6. With but three cells under stigma, which is very short, often more or less bicolored.....**bicolor**.
With four cells under stigma, which is longer, unicolorous (sometimes the number of cells is five or rarely three).....7.
7. Anterior third or fourth of pronotum pale; upper male appendage with apical point below.....**arizonica**.
Anterior half of pronotum pale; upper male appendage without point below8.
8. Head narrower behind; upper male appendage quadrangular, lower plates meet on median line.....**occulta**.
Head broader behind; upper male appendage triangular; lower plates are bent out in the middle exposing a cavity...**oblita**.

CHRYSOPIDÆ.

Chrysopa canadensis n. sp.

Yellowish; a black mark on each cheek, a vertical mark between the antennæ, divided above; palpi marked with black; second joint of antennæ black; pronotum broader, sides subparallel, with four

black dots forming a transverse row across the middle, a few spots on lateral lobes of the thorax; abdomen short, dark; legs pale. Wings with pale longitudinal veins, but almost all of the cross-veins are black, including the divisory, origin of radial sector, branches of radial sector, and anal veins; a small black cloud over the base of the radial sector; stigma distinct; hind wings with mostly pale venation, but the cross-veins are black at bases. Wings rather short, rounded at tips, second cubital cell nearly as long as third, slender, the third not much widened at tip, divisory veinlet ends beyond cross-veins, inner series (of only three or four veins) as near to radial sector as to the outer row; in hind wings the radial sector unites to median only for a short distance.

Expanse 21 mm.

From Go Home Bay, 12 July, Lake Huron, Can. (Walker).

***Chrysopa excepta* n. sp.**

Green; a prominent black stripe on each cheek from eye to mouth; antennæ black, except basal joint, which has a black line on the outer side; the outer side of each antennal socket is narrowly margined with black; palpi marked with black; thorax green, unmarked, pronotum broad, but plainly narrowed in front; abdomen pale; legs pale yellowish. Wings with green venation, costals and many cross-veins mostly black, but the gradates are pale; in hind wings the costals only black; stigma distinct in both pairs. Wings moderately long, rounded at tips, with inner gradate series (of four or five veins) about as near to radial sector as to outer row; second cubital cell no longer than the third, latter very broad at tip, divisory veinlet ends beyond the cross-veins; in hind wings the radial sector unites with the median only for a short distance.

Expanse 27 mm.

From Ft. Wingate, New Mexico, 25 July (Woodgate); near to *Ch. lineaticornis*, but the mark on cheek separates it, and in that species the inner gradate series is nearer to the outer than to the radial sector.

***Chrysopa incompleta* n. sp.**

Greenish; second joint of antennæ not black; a black band across the face just beneath the antennæ, a black spot on each cheek, and one on each side on the clypeus, no marks on the upper antennal sockets, two black stripes on the vertex; palpi marked with black; pronotum broad, sides parallel, narrowed in front, and the anterior outer edge black; abdomen dark; legs pale. Wings with green venation, the costals and radial cross-veins wholly black, other cross-veins black at bases, gradates dark; in hind wings the costals and bases of other cross-veins dark; stigma distinct in both pairs. Wings broad, rounded at tips, second cubital cell no longer than the third,

narrowed at tip, the third very broad at tip, divisory veinlet ends beyond cross-vein, inner gradate series (six to eight veins) as near to radial sector as to the outer row; in hind wings the radial sector unites with the median for nearly a cell length.

Expanse 27 to 29 mm.

From Beaufort. North Carolina, 15 May (Woglum), and Raleigh, North Carolina, 15 July (Sherman). Differs from *Ch. oculata* in clypeal marks and less marked antennal sockets.

***Chrysopa separata* n. sp.**

Close to *Ch. oculata* and *Ch. chlorophana*, but differs by the narrow straight mark on the cheeks that is not connected, nor bent up to the antennal mark; there is much red on the clypeus in form of a spot each side; there are no marks on the vertex; the basal joint of the antennæ is more or less red above; the anterior narrowed part of the pronotum is black on the edge. The wings have pale venation, the costals black at ends, the base of the second cubital cell and the two cross-veins behind it are black; in the hind wings the costals are dark. Wings hardly broad, the second cubital plainly longer than the third, latter broad at tip, the divisory ends beyond the cross-vein; the inner gradate series (of seven to nine veins) is much nearer to the outer row than to the radial sector.

Expanse 23-26 mm.

From Chimney Gulch, Golden, Colorado (Oslar), and Pecos, New Mexico, 23 June (Cockerell).

Some specimens show black at bases of branches of the radial sector, and radial cross-veins.

***Chrysopa pleuralis* n. sp.**

Green; second joint of antennæ black, basal joint reddish; face marked as in *Ch. oculata*, the marks over the antennal sockets continued back on the vertex, a posterior transverse black line on vertex (not seen in *Ch. oculata*); pronotum very broad, sides parallel, anterior margin rounded, with an interrupted black line near each outer side, and indistinct black spots within; rest of the thorax unmarked above, but the pleuræ have a black line under each wing to the base of the legs and a few transverse lines as shown in the figure; abdomen dark greenish; legs pale. Wings with green venation, and distinct green stigma, the costals black at each end, and many other cross-veins black in part, the gradates mostly dark, also the bases of the branches of radial sector; in hind wings the gradates are pale, and costals wholly black. Wings moderately broad, broadly rounded at tips; second cubital cell rather larger than the third, divisory veinlet ending much beyond the cross-vein; inner gradate series as near to radial sector as to outer series;

in hind wings the radial sector unites with median for only a short distance.

Expanse 28 mm.

From North Boulder Creek, Boulder County, Colorado, 21 August (Rohwer), and Steamboat Springs, Colorado, 27 May (Cockerell).

***Chrysopa furcata* n. sp.**

Pale greenish; antennæ wholly pale; head whitish, face with a furcate red stripe each side extending up from mouth to the base of the antennæ and to the eyes; pronotum broad, sides parallel, anterior margin convex, green, with a broad median whitish stripe, which is continued back over the rest of the green thorax; legs pale; abdomen pale green. Wings with green venation, costals and gradates almost wholly black, many other cross-veins, branches of the radial sector, and divisory veinlet in part black; stigma not very distinct; in hind wings the venation is less marked with black. Wings long, slender, acute at tips; second cubital cell not as long as the third, which is widened at the tip, the divisory veinlet ends much beyond the cross-vein; inner gradate series (of only five veinlets) nearer to the outer than to the radial sector; in the hind wings the radial sector unites with the median for nearly a cell length.

Expanse 30 mm.

From Ft. Wingate, New Mexico. 19 July (Woodgate coll.). One specimen has the sides of the thorax faintly, broadly purplish. It is in the group of *Ch. rufilabris*, but distinct by markings of the face; also from Stanford Univ., California.

***Chrysopa signatalis* n. sp.**

Yellow (or green in life); head with light red markings; a transverse mark across below the antennæ, one at base of the clypeus, connected at sides to other mark, and running up on inner orbits to the vertex where it widens; sometimes a line each side on vertex nearly meeting in front, and a pair of faint marks on the middle of vertex; antennæ wholly pale; thorax, abdomen, legs, and wings all pale greenish, unmarked; pronotum rather short, narrowed in front. Wings long and slender, acute at tip, venation green, stigma distinct; second cubital cell long, narrower at tip than in the middle, third still longer, wide at tip, divisory veinlet beyond the cross-vein; four or six veins in inner gradate series, about eight or ten in outer series, the two series much nearer to each other than either to margin or to radial sector.

Expanse 30 mm.

From Brownsville, Texas, June (Schaeffer); type in Museum Brooklyn Institute, cotype in collection Banks.

Chrysopa luctuosa n. sp.

Green, heavily marked with black; antennæ, including the second joint, wholly pale yellowish; face with a large shining black inter-antennal mark, spreading out below to the eyes, and above in a V-mark on the vertex; a black streak under each eye. Pronotum very short and broad, sides parallel, rounded in front, a broad submedian black stripe each side continued back on anterior part of the mesothorax; a transverse mark on the mesopleura, and a spot and angular mark below on the metapleura, black; abdomen dark green, marked with black each side. Wings with nearly all veins black, the subcosta, the median and the cubitus for one-fourth the way out are black, the radius wholly green; the radial sector black, the costals, gradates, anal veins, divisory veinlet, branches of radial sector, and marginal forks black, the gradates margined with brown, the stigma distinct and long. Wings moderately broad, hardly acute at tips, second cubital much shorter than the third, the divisory veinlet ending beyond the cross-vein, inner gradate series (of four veinlets) nearer to the outer series than to the radial sector.

Expanse 24 mill.

From Ft. Wingate, New Mexico, 26 June (Woodgate collection); goes in the group of *schwarzi*.

Chrysopa gravida n. sp.

Yellowish (greenish in life?); antennæ wholly pale, a large shining black interantennal mark spread out below to reach the eyes and above, the sockets are margined to the eyes; no marks on cheeks nor vertex; palpi marked with dark. Pronotum broad and rather long, and very much narrowed in front, with very broad, dark brown stripe on each side from margin nearly one-half way to middle. A brown dot on lateral lobes of meso- and metathorax. Abdomen and legs pale, wings with pale venation, but most of the cross-veins, base of median to beyond third cell, base of radial sector and the anals brownish; stigma indistinct; hind wings less heavily marked. Wings large and broad, tip rounded, second cubital cell as long as the third, latter wider at tip, divisory veinlet ends much beyond the cross-vein; inner gradate series (eight in number) much nearer the outer than to the radial sector; in hind wings the radial sector and median united only for a short distance.

Expanse 36 mm.

From Yosemite, California; a large and heavy species related to *Ch. robusta* of North Carolina, but the interantennal mark distinguishes it from that species.

***Chrysopa nanina* n. sp.**

Yellowish (probably greenish in life); a black mark each side on clypeus, an oblique blackish line under each antenna, uniting in the middle, a black line above antennal sockets from eye to eye, and angulate in the middle; palpi marked with black; antennæ pale on joints one and two, then black for about one-third the way to tip, thence pale. Pronotum with a broad blackish streak on each side reaching to margin, the mesonotum with two dark spots each side in front; abdomen and legs pale. Wings hyaline, the costa and median vein black at base, and the anal and its branches almost entirely black; the cubitus is rather darker on base than elsewhere; many of the cross-veins wholly black, branches of radial sector black, stigma distinct. Pronotum broader than long, much narrowed in front. Wings very long, hardly acute at tips; second cubital cell very slender, third barely widened at tip, the divisory veinlet ending much beyond the cross-vein, about ten or eleven gradates in outer series, about six in inner series, the inner series much nearer to the outer series than to the radial sector.

Expanse 37 mm.

From Palmerlee, Arizona (Biederman).

Our species of *Chrysopa*, with the longitudinal veins partly black at base, may be separated as follows; all have the antennal sockets margined above and below with black:

1. Pronotum broadly margined with black2
 Pronotum with two black stripes, remote from the margin; sub-
 costa black at base.....**luctuosa.**
2. Basal part of antennæ beyond the second joint black; subcosta not
 black**nanina.**
 Antennæ pale.....3.
3. Subcosta black; a black mark on each cheek.....**schwarzi.**
 Subcosta not dark, median, costa and anal only dark; no mark on
 cheeks**gravida.**

CHRYSOPIELLA n. gen.

Differs from *Chrysopa* in having but one series of gradate veins in either wing, this is the outer series; the median cells are consequently very long and curved. The radius beyond the end of the subcosta is connected to the costal margin by about four veinlets, the divisory cell is similar to that of *Chrysopa*; the antennæ are close together at base. The two species are greenish; not brownish as in *Eremochrysa*, which has only one series of gradate veinlets in the hind wings.

Type.—*Ch. sabulosa* Bks.

Chrysopiella pallida n. sp.

Pale yellowish (greenish in life?); second joint of the antennæ black, first joint with a black line on the outer side; a median triangular spot below antennæ, an angular mark under each eye, a pair of elongate spots on vertex, and the upper antennal sockets narrowly dark brown; palpi marked with brown; pronotum unmarked, plainly a little narrower in front, rest of thorax unmarked; legs pale; abdomen pale, apex of male abdomen with a tuft of black bristles above, two submedian tufts below the middle and a middle point tipped with reddish. Wings hyaline, veins pale, unmarked, stigma distinctly yellowish, and near tip of wings, veins with black bristles. Both wings narrow, elongate, tips hardly acute, second cubital cell very narrow, no longer than the third, latter widened at tip, the divisory veinlet ends much beyond the cross-vein, the outer gradate series is near margin, about half of marginal veins forked.

Expanse 21 mm.

From Rincon, New Mexico, 31 August (Cockerell).

HEMEROBIIDÆ.

Our species of *Symphorobius* may be distinguished as follows:

1. Longitudinal veins of wing wholly dark2.
Longitudinal veins of wings not all dark.....3.
2. Cells with two dark streaks.....**occidentalis**.
Cells all dark**umbratus**.
3. Longitudinal veins with minute dark dots6.
Longitudinal veins with dark streaks; face pale4.
4. Fore wings with two curved dark bands over the gradate series.
bifasciatus.
No such bands.....5.
5. Wing surface dark, margin mostly dark**angustus**.
Wing surface pale, margin with alternate dark and light spots.
californicus.
6. Wings very broad at costal base; first radial sector usually connected to second by a cross-vein, a large dark spot on fore wing near hind margin toward base.....**amiculus**.
Wings much narrower on the costal base, rarely any cross-vein between first radial sector and the second7.
7. Three broad dark bands on fore wings.....**pictus**.
No such broad bands on wings.....8.
8. The dark dots on the veins occupy as much space as the pale, surface of wing mostly dark.....**arizonicus**.
The dark dots occupy much less space than the pale.....9.

9. Wings very narrow; with scattered larger spots at forkings of veins.
sparsus.
 Wings without such spots10.
10. Wing very narrow on costal base, no dark mark over inner gradate series**perparvus.**
 Wing broader on costal base, a large dark mark over end of inner gradate series.....**barberi.**

Symphorobius californicus n. sp.

Head yellowish, two brown stripes under each eye to mouth, a brown spot between antennæ, a curved brown line on vertex, its ends reaching forward to the sides of the eyes; antennæ pale on basal joints, blackish beyond, then pale, but dark near tip; pronotum with dark brown mark on each side. Wings whitish gray, with many dark spots, often including one or two pale dots, few marks on costal area, except it is dark brown near stigma; the venation pale, with short brown streaks, the veinlets connecting first and second radial sectors back to the radius, both gradate series and the lower branch of the cubitus all heavily dark brown, hind margin with alternate dark and whitish spots. Wings rather slender, the two radial sectors not connected, except at outer gradate series; each gradate series with the veinlets rather close to one another.

Expanse 12 mm.

From Los Angeles, Claremont, and Pasadena, California.

Symphorobius sparsus n. sp.

Pale reddish brown; face pale; antennæ dark near base, head very high on vertex, almost bilobed. Wings long, slender, pale, venation with minute dark dots, small brown spots over the gradates and on forks of veins, margin of wings with minute dark dots like those on veins. The four of inner gradate series are each widely separated from the next, so that they form a very oblique series; the outer four gradate veinlets not so widely separated, but the one between the radial sectors is much more basad than the others; two long medial sectors, each soon forked, not connected together, except at outer gradate series.

Expanse 8 mm.

From Kansas (Douglas County?) (Snow).

Symphorobius arizonicus n. sp.

Dark, shining brown; antennæ blackish on base, face with broad pale band just below the antennæ. Wings dark brown, densely irrorate with small irregular hyaline spots and streaks, but apparently a uniform dark brown all over; venation with many dark dots, close together; posterior and outer margins with alternate pale and dark spots. Wings not very long, but not near as broad as in *S. amicus*;

the two radial sectors not connected; the four outer gradates rather well separated, the one between the radial sectors more basad than the others, the inner four gradates not far apart, the hindmost is beyond the next above it; hind wings faintly brownish, with dark dots around the margin.

Expanse 10 mm.

From Prescott, Arizona (Osler).

***Symphorobius bifasciatus* n. sp.**

Head pale, a dark brown stripe under each eye, a spot between antennæ, a brown spot just above antennæ and a broken one behind on vertex, leaving a pale transverse band between them; pronotum dark brown, with a median yellowish stripe. Wings hyaline, with a curved brown band over each gradate series, and also the basal part of cubitus; venation pale, with rather long dark brown streaks; hind margin of wing pale, with dark spots. Wings rather slender, the two radial sectors not connected, except at outer gradate series, these not much separated from each other, the four in inner gradate series make a curved line, but not widely separated.

Expanse 9 mm.

From Colorado (Baker), No. 1027.

MANTISPIDÆ.

***Mantispa cincticornis* n. sp.**

Head pale; a broad, brown, vertical stripe from mouth up between antennæ, broader than in *N. sayi*; antennæ yellow on basal fourth, then black, then yellow for several joints and the tip blackish. Anterior part of pronotum dark; thorax and abdomen reddish brown, latter marked with black; legs pale, femora dark at tip. Wings with long, narrow brownish stigma, and a small dark apical spot, the fore pair fuscous at base.

In general structure similar to *N. interrupta*, but separated by banded antennæ.

Expanse 22 mm.

From near Brownsville, Texas (Snow).

***Mantispa fuscicornis* n. sp.**

A brown spot in middle of the clypeus, on the sides and across base of the clypeus, and at base of antennæ; also dark above antennæ; basal joints of antennæ yellowish, beyond the second joint dark brown or blackish, vertex with brown spot each side near eye; pronotum pale, front edge dark, with anterior sides dark and a short, dark

median line. Base of fore wings fuscous, a long reddish stigma, but no apical spot; legs yellowish. In general structure similar to *M. sayi*.
Expanse 22-34 mm.

From Lake Worth and Kissimmee, Florida, the former from Mrs. A. T. Slosson.

***Mantispa brunnea*, var. *occidentis* n. var.**

Similar to *M. brunnea*, but the wings are much less marked with brown; there is a distinct black band at base of the antennæ; a black band on vertex; a black band on front of the pronotum, and behind the anterior fourth it is wholly dark; meso- and metascutelli yellow, the femora are blackish.

From Wawawai, Washington (Mann): Ormsby County, Nevada (Baker), and Chimney Gulch, Golden, Colorado (Osler).

MYRMELEONIDÆ.

***Brachynemurus pulchellus* n. sp.**

Head pale; a large black interantennal mark, leaving a small pale spot each side above the antennæ; a transverse black line on the vertex, enlarged in the middle to inclose a small dot, and a dull black mark each side behind; antennæ pale, annulate with black, basal joint wholly whitish; palpi tipped with black; pronotum black, with a pale median stripe, broadest in front, and nearly interrupted in middle, a spot each side in front, and a stripe each side behind, widest behind; thorax dark, lined with pale, metanotum with a broad pale stripe each side, the scutellum with two pale dots, a few black bristles and long white hairs on the thorax; legs pale, dotted with black, forming bands at apex of femora, middle and tip of tibiæ, and tips of tarsal joints, all with long white hairs, and shorter black bristles; abdomen black; segments near tip marked with pale in middle. Wings hyaline, venation black and white, many cross-veins margined with fuscous, others snow-white, stigma black, gradate series margined with dark; hind wings scarcely marked, but the venation black and white. Wings rather narrow, fore pair scarcely acute at tips, hind pair very plainly so, three cross-veins before radial sector in fore wings, two in hind wings, about seven branches of the radial sector, four or five cross-veins between anal vein and cubital fork in fore wings.

Expanse 30 mm.

From Brown, California, 10 October (Grinnell). Differs from *B. barberi* in pale femora, in marked metanotum, and in spot each side on pronotum; the head and thorax are differently marked from *B. pusillus*.

Brachynemurus carolinus n. sp.

Head pale, a narrow black band across face, a line up from it between the antennæ; a brown mark under each antenna, and one on basal and one on the second joint, rest of antennæ annulate with pale brown; front mostly black; vertex with a dark line on the front edge, extended back a little on each side of middle; pronotum grayish yellow, with three black lines, the median one forked in front, the lower edge black in the middle, all these lines rather indistinct, rest of thorax lined with black, a double line above fore wings, united behind, a median line, extending over the scutelli, which are also marked on the sides, and a submedian line each side. Abdomen brown, with a pale streak on each upper side, leaving a brown line on the crest; legs pale, femora with many dots, a mark on middle and one at tip of tibiæ, the fourth tarsal joint and the tip of the fifth black; spurs rather longer than two tarsal joints. Wings hyaline, venation interruptedly black and white, with small black spots along the upper side of cubitus, larger near tip, and the last one oblique and extending upward toward the tip of wing; also a spot near end of the anal vein; many other smaller spots on the forkings of veins, especially on the posterior and outer portion; many of the costal cross-veins white in middle; stigma pale, with basal dark spot. Hind wings without spots, but the venation marked. Wings not very long, acute at tip; three cross-veins before radial sector in fore wings, two in hind wings, about eleven branches of radial sector in each wing. Pronotum longer than broad; the abdomen of female barely longer than the wings.

Expanse 38-48 mm.

From Southern Pines, North Carolina, 8, 11, 20 June (Manee).

PANORPIDÆ.**Panorpodes carolinensis** Bks.

Only the males of this, as well as of *P. oregonensis*, have been described. The females are very short winged and unable to fly, but hop about very lively when one attempts to capture them.

Panorpa longipennis n. sp.

The female in general is similar to *P. nebulosa*, but with plainly larger and longer wings, and there are five cross-veins in the apex of each fore wing; there is a large basal spot, larger than in *P. nebulosa*, two larger spots beyond, a narrow, irregular, pterostigmal band, the anterior margin of which does not reach the costal edge, an anal spot, and small spots in the apical part of wing that are somewhat connected together, and form irregular apical and preapical bands.

Expanse 35 mm.

From Black Mountain, north fork of the Swannanoa River, North Carolina, latter part of May.

Bittacus arizonicus n. sp.

Closely related to *B. occidentis*, of same color, thickened femora, etc. But the male genitalia are more scabrous at tip, the superior pieces are more pointed, and narrower at tip and the inferior median piece has an apical tooth that can be seen in side view. The size is the same.

From Palmerlee, Arizona, August.

TRICHOPTERA.**LIMNEPHILIDÆ.****Stenophylax calypso** n. sp.

Head yellow; basal joint of the antennæ yellowish, beyond brownish, rather strongly serrate beneath; ocelli large; anterior warts small, posterior warts narrow, transverse, nearly twice their length apart, these, the pronotum, and parts of mesonotum with black bristles. Thorax yellowish, darker above base of the fore wings; abdomen yellowish brown, darker at tip; legs pale yellowish, the tarsi and tibiæ rather reddish yellow, all with black spines; preapical spurs short, nearly twice their length before the apex; last joint of hind tarsi without spines beneath. Wings pale brownish, with many (perhaps 100) rather large, hyaline spots, much larger than in *Allophylax punctatissimus*, and they do not run together much, the costal area pale, without spots. The fore wings are broad, the outer margin rounded, but rather indented at ends of the veins; the discal cell is about twice as long as its pedicel, fork 1 extending its entire width back on the discal cell; the cubitus at the arculus is much farther from the branch of the median than in *Allophylax punctatissimus*, all the apical cells are broad at base. In the hind wings the apical cells are also broad at base, the third broader than the fourth.

Expanse 28 to 32 mm.

From the Catskills, New York, June, and Long Island, New York, May.

RHYACOPHILIDÆ.**Rhyacophila grandis** n. sp.

Belongs to section in which fork 2 extends farther basally than fork 1. Antennæ pale, scarcely annulate with brown, basal joint also pale; palpi pale, last joints rather darker; head pale, with long yellowish hair, vertex darker, hairs on warts golden, ocellar warts hardly one-half diameter apart; thorax yellowish above, lateral lobes brown; abdomen black, tip paler, with the extreme tips of genitalia black; legs pale yellow, spurs darker, in female the front and middle tibiæ show a black spot above just before the preapical spur, this spur on front tibiæ is

twice as long as width of joint. Wings dark, with many small yellowish white spots, especially numerous in apical half, larger semi-circular ones on margin between ends of the veins, a large circular one with geminate dark dot in the base of the second fork, an elongate spot on the stigma, several in the costal area; hind wings smoky, darker near tip, and there indistinctly maculate with pale, the radius black, other veins brown. Fore wings rather broad, outer margin slightly rounded; fork 2 plainly much before 1, fork 3 longer than pedicel beyond the cross-vein, fork 5 is broader near middle than at tip, and fork 4 widens but little at the tip.

Expanse 30 mm.

From Vernon; British Columbia, and Bon Accord, British Columbia, 14 June (Russell).

***Rhyacophila atrata* n. sp.**

Belongs to section in which fork 2 extends farther basally than fork 1. Deep black, head and thorax rather shining, abdomen dull black; ocellar warts fully two diameters apart; legs yellowish, tarsi darker, spurs black, preapical one on front tibiae but little longer than the width of the joint. Wings black, stigma very dark, a snow-white spot over veinlet connecting the medius and cubitus, no other pale spots; fore wings quite short and broad, outer margin rounded, fork 3 fully as long as the pedicel beyond cross-vein, fork 4 wide at tip, fork 5 with parallel sides for most of the distance; hind wings black, but not so intense as the front pair.

Expanse 12 mm.

From Black Mountain, north fork of the Swannanoa River, North Carolina, May. The smallest species so far described from the United States.

***Rhyacophila luctuosa* n. sp.**

Belongs to section in which fork 2 extends farther basally than fork 1. Head, palpi and antennae deep black, head with much golden hair, ocellar warts more than two diameters apart; thorax black, with golden hair in front; abdomen dull black, paler beneath, and genitalia pale; legs pale on femora, dark on tibiae and tarsi, spurs dark, the preapical one on first tibia nearly twice as long as width of the joint. Wings blackish, veins black, stigma also black, heavily spotted with yellow in the cells, a larger spot on the stigma, no large spot on anal margin; wings long, but outer margin rounded, fork 3 shorter than the pedicel beyond cross-vein, fork 5 with nearly parallel sides; hind wings dusky, black near tips.

Expanse 20 mm.

From Woodworth Lake, Fulton County, New York, 23

June (Alexander), and one (not fully colored) from Dane County, Wisconsin (Vorhies). This species is darker and more maculate than *R. torva*.

***Rhyacophila basalis* n. sp.**

Belongs to section with fork 1 extending further basally than fork 2. Antennæ pale, faintly annulate with brown, basal joint nearly black; palpi dark; head black, some white hairs on the face, ocellar warts nearly their diameter apart, two smooth submedian ridges behind; thorax brown; legs pale yellow, spurs darker, tarsi scarcely darker toward tip, tibia 1 unmarked, preapical spur nearly twice as long as the width of joint. Wings rather uniformly smoky, the stigma long, very much darker; fore wings long and slender, fork 3 shorter than pedicel beyond cross-vein, outer apical margin straight; abdomen blackish above, the genitalia pale.

Expanse 20 mm.

From Claremont, California (Baker).

***Rhyacophila angelita* n. sp.**

Belongs to section in which fork 2 extends farther basally than fork 1. Pale yellowish throughout, the dorsum of abdomen darker toward tip, palpi and antennæ pale, the latter slightly marked with brown, the head with pale yellowish hair, the ocellar warts scarcely one-half diameter apart; legs very pale yellow, tarsi hardly darker, spurs brown, preapical one on front tibiæ not twice the width of joint. Wings pale, stigma brownish, and some faint brown spots at ends of veins, and over some cross-veins; fore wings moderately long and broad, the outer margin much rounded, fork 3 shorter than pedicel beyond cross-vein, fork 4 wide open at tip, and longer than 3; fork 5 rather narrower at tip than in the middle; hind wings pale.

Expanse 20.

From Pasadena, Los Angeles County, California, 1 May (F. Grinnell).

***Rhyacophila brunnea* n. sp.**

Belongs to section in which fork 2 extends farther basally than fork 1. Palpi pale on basal part, dark at tip; antennæ pale, annulate with brown, basal joint brownish; head brown, with mostly black hair, ocellar warts fully their diameter apart, thorax pale brown, with black hair. Abdomen dark brown; legs pale yellow, the tarsi and spurs brown, preapical spur of front tibiæ only little more than width of the joint. Wings brown, nearly uniform, and scarcely marked, the long, dark stigma with a pale yellow spot and three smaller pale spots in the space behind it, one in base of fork 2, and faint yellowish spots between ends of the veins on outer and apical margins; hind wings

pale brownish. Fore wings long and narrow, outer margin nearly straight, fork 3 longer than pedicel beyond cross vein, fork 4 no longer than 3, fork 5 with sub-parallel sides.

Expanse 22 mm.

From Beulah, New Mexico, 10 July, 27 July (Cockerell).

***Rhyacophila carolina* n. sp.**

Belongs to section in which the fork 2 extends farther basally than fork 1. Palpi brown; antennæ pale on basal half and annulate with brown, dark or nearly black on apical half, basal joint pale; head dark, mostly golden, but some black hair, ocellar warts nearly twice their diameter apart; thorax brown, black on the sides above the wings, with some golden hair; abdomen brown; legs pale, in male the basal part of tibia and basal joint of tarsus is dark above, the apical part of tibia very pale, in female legs are all pale yellow, spurs brown, preapical spur on front tibiæ nearly twice as long as width of joint. Wings rather short, broad in middle, outer margin rounded; dark brown to nearly black, much spotted with white on apical part, with larger spots along outer and apical margin between veins, and a large spot before middle of wing on the hind margin, a black band across apical cells, black around stigma, and a few other black patches. Fork 3 about as long or longer than the pedicel beyond cross-vein, fork 4 wide at tip.

Expanse 20 mm.

From Black Mountain, north fork of the Swannanoa River, May, North Carolina.

***Rhyacophila formosa* n. sp.**

Belongs to section in which the fork 2 extends farther basally than fork 1. Palpi black, antennæ with black basal joint, beyond pale, broadly annulate with deep black; head black, with black and some white hair, ocellar warts small, about twice their diameter apart; thorax black, with two faint white submedian streaks; abdomen black above, paler beneath; legs pale, front and mid-tibiæ with black spot before the preapical spur, and also at tip, the tarsi marked with dark, a narrow pale ring at the preapical spur, latter in the front tibia but little longer than width of the joint. Wings deep black, with innumerable small patches of yellow hair, many large white spots, one in base of fork 2, several along the apical and outer margin between veins, but two spaces at tip, and one near anal angle unspotted, numerous small spots near anal angle and in the stigmal region; fore wings long and narrow, outer margin nearly straight, slightly incurved at fork 4, fork 3 longer than pedicel, beyond cross-vein, fork 4 scarcely as long as fork 3, fork 5 with parallel sides.

Expanse 22 mm.

From Delaware Water Gap, New Jersey (Slosson).

Rhyacophila mainensis n. sp.

Belongs to section in which the fork 1 extends as far or farther basally than fork 2. Palpi pale; antennæ pale, basal joint pale; head dark, with yellowish hair, ocellar warts very small, fully twice their diameter apart; thorax black, abdomen brown; legs pale, tarsi darker, spurs brown, preapical one of front tibiæ fully twice the width of joint. Wings long and slender, outer margin straight; uniform pale brownish, the stigma hardly darker, no prominent spots, and but little hair, fork 3 a little longer than the pedicel beyond the cross-vein, fork 4 long and narrow, fork 5 with subparallel sides, also long, fork 1 reaching a little farther basally than fork 2.

Expanse 20 mm.

From Moosehead, Maine, 18 July (Johnson).

Our species of *Rhyacophila* are separable as follows:

1. Fork 2 of fore wings extends farther basally than fork 1.....7.
Fork 2 does not extend farther basally.....2.
2. Tarsus I marked with black and pale, preapical spur of front tibiæ scarcely longer than the width of joint, which is pale at that place.....**coloradensis**.
Tarsus I not dark and pale.....3.
3. Preapical spur of front tibiæ hardly longer than width of joint; tibiæ unmarked, fork 3 shorter than pedicel.....**terminata**.
Preapical spur plainly much longer than the width of joint.....4.
4. Fork 3 as long as pedicel.....5.
Fork 3 shorter than pedicel, antennæ yellowish, basal joint dark, legs yellow and spurs dark.....**basalis**.
5. Spurs pale as legs.....**hyalinata**.
Spurs darker than legs.....6.
6. Fore wings long and pointed, outer margin straight..**mainensis**.
Fore wings shorter and broad, outer margin rounded....**pacifica**.
7. Antennæ black, except basal joint.....8.
Antennæ pale, more or less annulate11.
8. Wings much marked, a yellowish spot on the stigma..**luctuosa**.
Wings less marked, no spot on stigma.....9.
9. Wings deep black, no marks, basal joint of antennæ black, 6 mm. long.....**atrata**.
Wings paler, somewhat spotted, about 10 mm. long.....10.
10. Wings brown, more or less marked, basal joint of antennæ dark.
torva.
Wings darker, barely marked, basal joint of antennæ yellowish.
nigrita.
11. Large, over 25 mm. expanse, antennæ and head pale.....12.
Smaller species13.
12. A curved series of connected pale spots in the middle of outer margin.....**fuscula**.
No such series of spots.....**grandis**.

13. Head dark, wings much maculate, male front tibiæ marked with dark 14.
 Head pale, wings hardly maculate; male front tibia unmarked..15.
 14. No unspotted spaces on margin of wing; less black.....**carolina**.
 Margin with some unspotted spaces, deep black.....**formosa**.
 15. Wings shorter and rounded**angelita**.
 Wings long and nearly pointed.....**brunnea**.

Glossosoma nigrrior n. sp.

Black; antennæ pale, darker at tip; palpi black; head and thorax with black and white hair, ocellar warts transverse, about one and one-half diameters apart; abdomen black; legs pale yellowish, spurs brown. Wings blackish, fringe black, stigma dark. Venter of male with two spines near tip; metatarsi of middle legs of female broad and flattened. Wings moderately long, fork of median vein as far back as the fork of radial sector, fork 4 wide at tip, much shorter than 3 or 5. Expanse 18 mm.

From Black Mountain, North Carolina, north fork of the Swannanoa River, May.

SERICOSTOMATIDÆ.

Brachycentrus occidentalis n. sp.

Two males from Bon Accord, British Columbia.

May 4th (Russell coll.) are very similar to *B. incanus*; the hair of maxillary palpi is mixed grey and black; the male appendages black and acute at tip, together forming a narrowly cleft plate (it is so in both specimens, and in a series of *B. incanus* they form an entire plate). The lobe of penultimate ventral segment is broader than in *B. incanus*, and blackish at tip.

Our species of *Brachycentras* may be separated as follows:

1. Femora yellowish.....2.
 Femora black.....3.
2. Wings of ♀ whitish; superior appendages of ♂ forming an entire plate**lutescens**.
 Wings of ♀ dark grey; superior appendages of ♂ forming an emarginate plate.....**similis**.
3. Superior appendages of ♂ forming an entire plate, penultimate ventral segment with a very narrow lobe.....**incanus**.
 Superior appendages of ♂ forming a cleft or emarginate plate.....4.
4. Superior appendages of ♂ forming a broadly emarginate plate; penultimate ventral segment not produced in a rounded lobe, only slightly angularly produced.....**nigrisoma**.
 Superior appendages of ♂ forming a narrowly cleft plate; penultimate ventral segment with a rather broad lobe.
occidentalis.

Schizopelex lobata n. sp.

Maxillary palpi whitish, very much enlarged, covering the face; antennæ dark brown; vertex with two elongate parallel black lobes reaching back to the thorax; body dark brown; genitalia yellowish; legs yellowish, the tibiæ rather darker; wings a uniform dark grey, venation black, fringe blackish. Venation is similar to *S. festiva*, but the subapical cells of fore wings reach back much farther than in that species, being fully their width before the small cell on margin of wings at the end of anal vein. The lateral pieces of the male genitalia are much more slender than in *S. festiva*; and the lobes of head are more elongate.

Expanse 23 mm.

From Woodworth Lake, Fulton County, New York, 22 June (Alexander), and Squam Lake, New Hampshire, 14 July (G. M. Allen).

THELIOPSYCHE n. gen.

Venation similar to *Micrasema*, but fork 3 of hind wings is present; spurs 1, 2, 4 in ♂, 1, 4, 4 in ♀. Antennæ wide apart at base, in ♂ the basal joint longer than width of head, in ♀ very much longer; maxillary palpi of ♂ upcurved, bristly, covering the face; four warts on vertex, small one each side in front, and a long transverse one each side behind. In the fore wings the discal cell is long and closed; but in the hind wings open.

Theliopsyche parva n. sp.

Blackish; antennæ black; labial palpi white; vertex and thorax with black bristles. Wings uniform blackish brown, with black hair, long on veins, fringe very long, dark; the arculus and cross-vein from the radial sector to median are whitish hyaline. Legs rather pale, the spurs short, hardly three times as long as width of tibiæ, the subapical pair of the hind tibiæ not twice their length before the apical pair. In the female the radial sector of hind wings forks twice at one place.

Expanse 8 to 9 mm.

From Woodworth's Lake, Fulton County, New York, 23 June (Alexander).

Notiopsyche carolina n. sp.

Pale yellowish throughout; antennæ with the apex of each joint above broadly marked with brown; basal joints mostly with grey hair, but not as dense as in *N. latipennis*. Wings with short, sparse, yellowish hair, and with scattered longer black hairs, especially on the veins, and along the margin, the apical fringe quite long, and the apical half of fore wings distinctly infuscated, and a blackish patch just beyond

the discal cell. Basal joint of antennæ very slender, much longer than the width of the head, rest of antennæ rather serrate above, and hairy beneath; long erect grey hair on head and pronotum. Wings rather short and broad, the discal cell ends but little beyond middle of the wings, and is about as near to hind as to costal margin; the small cell in middle of hind margin is three times as long as broad.

Expanse 12 mm.

From Southern Pines, North Carolina, 23 April (Manee). Very similar to *N. latipennis* in general, but much smaller and longer, less hairy joints of antennæ.

Mormomyia unicolor n. sp.

Maxillary palpi short, directed forward, black haired; antennæ rather far apart at base, basal joints as long as head, black haired with some white intermixed, beyond rather heavy, but soon tapering, pale, narrowly annulate with black. Vertex and prothorax with long erect, brown hair, rest of thorax with mostly black, but some white hair. Legs pale yellowish, tibiæ darker, abdomen brown, paler at base below; wings uniform blackish grey, with many small yellow hairs, and longer black hairs, latter more abundant on the veins, venation yellowish; apical fringe very short. Wings a little broader than in *M. vernalis*, but the venation very similar; the third subapical cell does not extend back of the base of the second subapical cell.

Expanse 20 mm.

From Switzer's Camp, San Gabriel Mountains, California, June (Grinnell coll.).

PHANOPSYCHE n. gen.

Sericostomatid, subfamily Lepidostomatinae.

Discoidal cell closed in both wings; spurs 2-4-4; palpi recurved, and tipped with dense brush of long black hair; basal joint of antennæ rather wide apart at base, moderately long; in the hind wings there is a closed cell formed by the union of fork 2, as in *Paraphlegeteryx*, but the venation is otherwise quite different; the fork 1 is not stalked.

Phanopsyche grisea n. sp.

Palpi densely long black haired; basal joint of antennæ brown, with dark hair, rest of antennæ yellowish, barely annulate above; legs pale, the tarsi rather darker, the subapical pair of spurs not twice their length from the apical pair; thorax brownish in the middle, yellowish near base of the wings; abdomen brown above, paler beneath; wings pale uniform grey, venation yellowish brown. Wings rather broad, fore-pair with broad costal area, the subcosta and radius rather undulate, fork 1 reaching back to the discal cell; in the hind wings there is a slender closed cell, formed by union of fork 2; several of the

veins are much curved. The antennæ are rather short, with short bristles at tips of the joints. The male genitalia show a pair of parallel appendages beneath, and above a rounded bristly piece each side, and above this a heavy tuft of long hair.

Expanse 16 mm.

From Woodworth's Lake, Fulton County, New York, 22 August and 14 September (Alexander coll.).

HYDROPSYCHIDÆ.

***Wormaldia plutonis* n. sp.**

Black, and black haired; some white hairs over the mouth and extending up between antennæ and a narrow band of white hair across the front of vertex; anterior femora narrowed rather suddenly beyond the middle; subbasal spurs of middle tibiæ not nearly the length of longer spur from base of joint, on hind tibiæ the middle spurs are much nearer to tip than to base, about twice the length of the shorter spur from tip of joint; the uniform deep black wings have a short black fringe; the fore wings are rather slender, the third apical fork has a pedicel as long as the fork; the middle and hind tibiæ are white haired, rest of legs black.

Expanse 13 mm.

From Delaware Water Gap (Mrs. A. T. Slosson), and Johnstown, New York, 28 June (Alexander).

***Wormaldia femoralis* n. sp.**

Black, and black haired; white hair over the mouth, some short white hair on vertex, not such long tufts of black hair as in *W. plutonis*; legs mostly pale yellow, coxæ and bases of femora, the spurs and tarsi black; the sub-basal spurs of middle tibiæ are the length of the longer one from the base of joint, the middle pair of hind tibiæ are as in *W. plutonis*. Wings black, but not as jet black as in *W. plutonis*, with black fringe; third apical fork is not quite as long as its pedicel.

Expanse 12 mm.

From Sport Island, Sacandaga River, Fulton County, New York, 27 June (Alexander coll.). Readily separated from *W. plutonis* by the pale femora.

***Diplectrona nigripennis* n. sp.**

Black, with black hair; rufous hair over the front of head, and some on the back; prothorax with long rufous hairs, and large tufts of rufous hair at base of the wings; tip of abdomen yellowish; legs yellowish, femora rather darker. Wings uniform dull black, in apical part of fore wing some very faint pale spots in the middle of some cells, and a hyaline spot at arculus; hind wings darker on costal area and near the stigma than elsewhere; fork 3 of fore wings twice as long as its

pedicel. Antennæ strongly crenulate, the joints not near as long as in *D. modesta*.

Expanse 20 mm.

From Mt. Tamalpais, Marin County, California, 24 February (F. Grinnell).

***Polycentropus remotus* n. sp.**

Head with yellowish white hair above and between the antennæ, vertex with black hair, tufts of pale at base of wings; palpi brown; antennæ pale, annulate with brown; abdomen brown above, yellowish beneath; legs yellowish, tarsi and anterior tibiæ rather darker. Wings brown, heavily maculate with pale yellowish, a long pale streak on middle of costal area, apical half of stigma pale, pale spots on margin of wing between the ends of the veins, and many small yellowish patches elsewhere; thyridium and arculus hyaline white. Hind wings smoky, darker on tips, fringe brown. In fore wings fork 1 is scarcely as long as its pedicel, forks 3 and 4 do not reach back quite as far as fork 2; in hind wings fork 1 is also very short.

Expanse 15 mm.

From Peachland, British Columbia, 23 July (Wallis).

***Nyctiophylax moestus* n. sp.**

Head with dense pale yellowish hair; palpi brown, antennæ yellowish, annulate above with brown; some black hair above the eyes, on the pronotum, and at base of the wings; abdomen dark above; legs pale, the basal joint of tarsi barely darker above, the anterior tibiæ and tarsi darker in front. Wings blackish, nearly uniform, but rather darker at tips, in some lights faintly golden at tip; fringe black; a faint whitish spot at the arculus; hind wings smoky, darker at tip, fringe black. Forks 2, 3, 4 and 5 in fore wings, forks 3 and 4 rather short, discal cell longer than pedicel; in hind wings the cell is closed, forks 2 and 5 present, fork 2 from apex of the cell.

Expanse 11 mm.

From Peachland, British Columbia, 19 August (Wallis). Darker than our other species of the genus.

HYDROPTILIDÆ.

***Orthotrichia pictipes* n. sp.**

Face densely black haired; basal third of antennæ heavy, densely jet black haired, beyond brown, each joint annulate with pale on base; antennæ not half as long as wings; palpi pale yellowish; vertex with grayish white hair; thorax mostly with gray hair, a black tuft each side at anterior base of mesothorax; femora of legs rather pale, tibiæ darker, mid and hind pairs distinctly fringed behind toward tip; spurs 0-3-4 mostly white, but black on extreme base; tarsi pale, very distinctly marked with brown on basal part of each joint above; abdomen dark. Wings slender, acute; deep black, in some lights rather

tawny near middle, with three white spots near middle in a transverse row, nearly forming a line across wing, a white dot at base of stigma, three smaller beyond; and three on the posterior apical border, the fringe beyond the white stigmal dot is very long, dense, and black, a tuft of white fringe at extreme tip of wing; the posterior fringe jet black, and about as long as width of the wing; hind wings uniform blackish, with a long, deep black fringe; the front margin of hind wing is straight to the middle and then only barely excavate or rather incurved to the tip.

Expanse 7 mill.

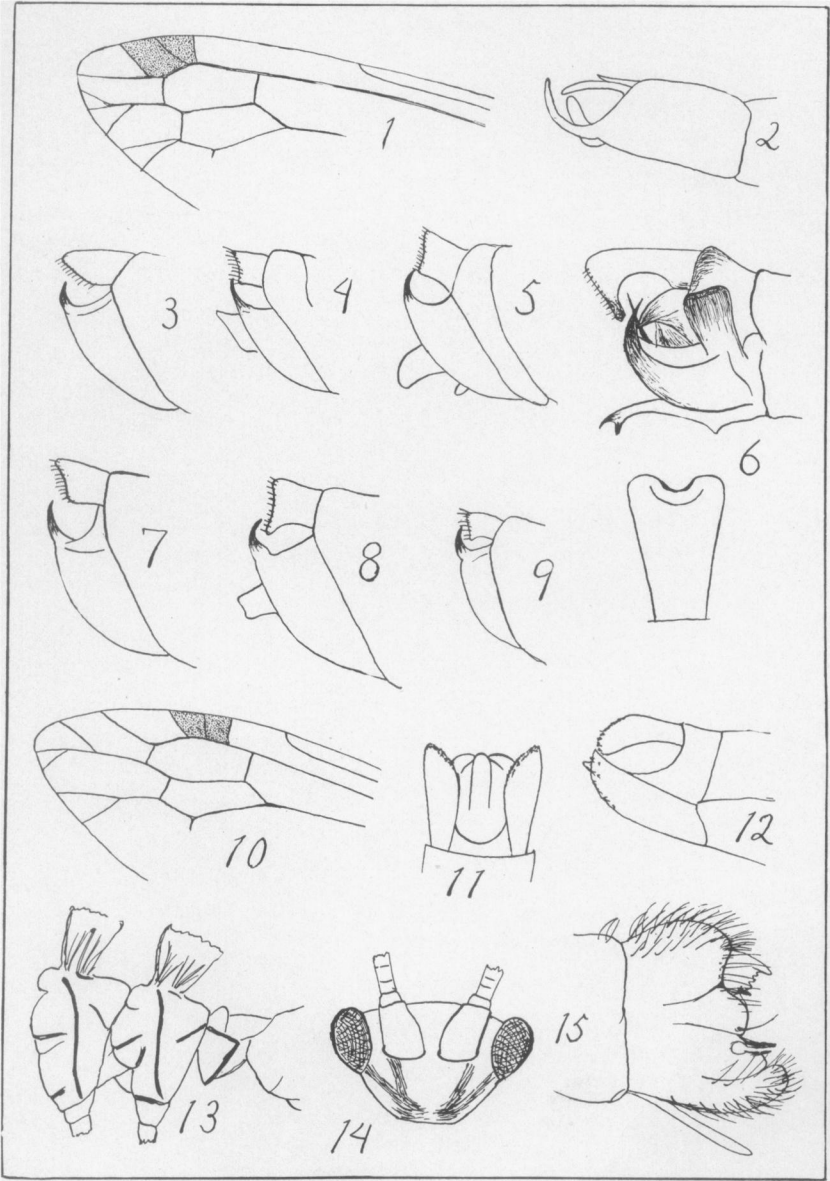
From Johnstown, New York, 25 June, Hales Creek (Alexander coll.) and Poquonock, Conn., 22 May (Walden coll.).

On account of the short and basally thickened antennæ, it may form a new genus.

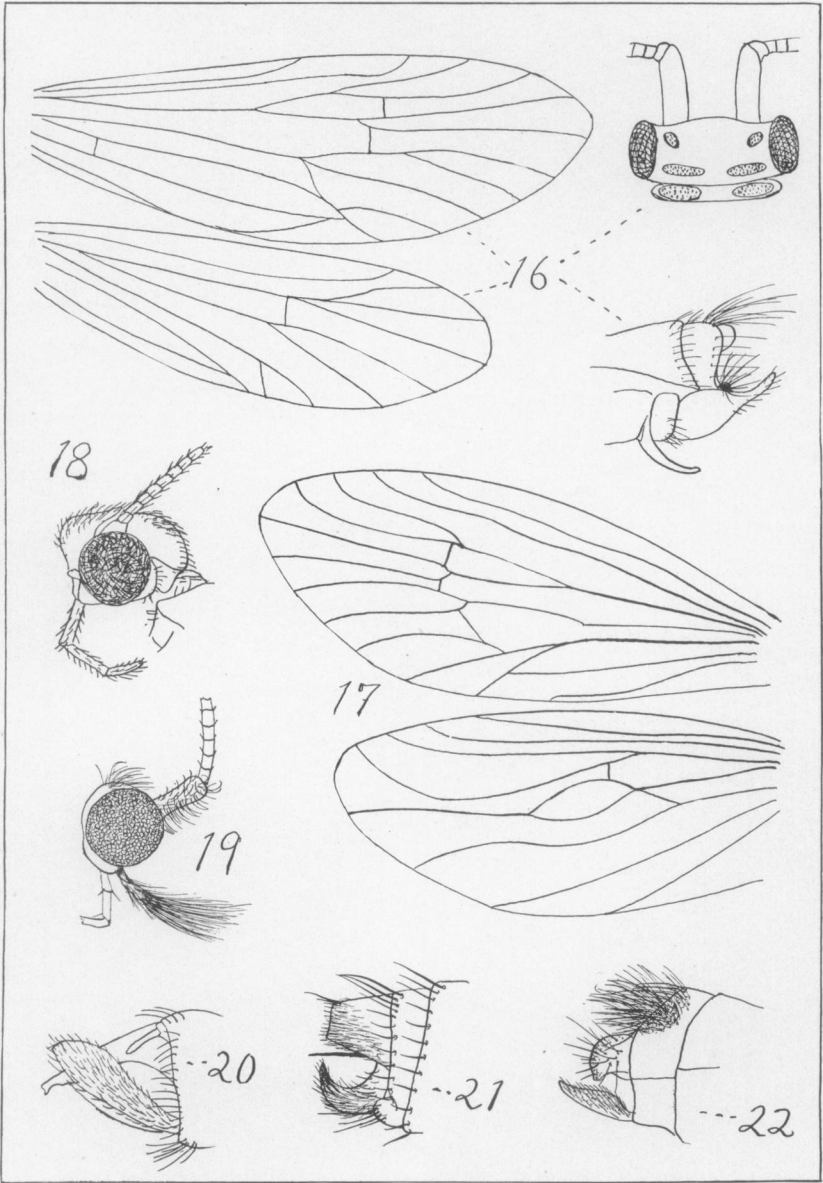
EXPLANATION OF PLATES.

FIG.

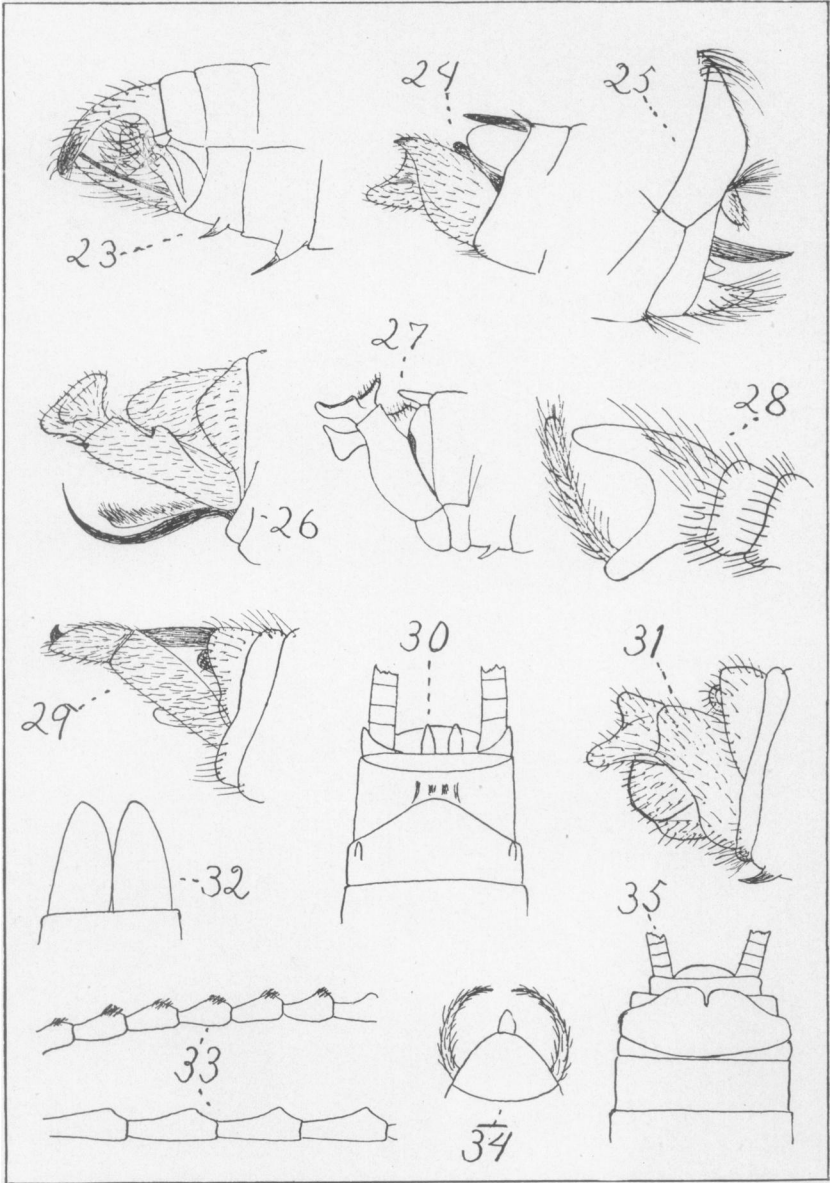
1. *Raphidia distincta*, apical part of fore wing.
2. *Raphidia minuta*, genitalia.
3. *Raphidia oblita*, genitalia.
4. *Raphidia occulta*, genitalia.
5. *Raphidia assimilis*, genitalia.
6. *Raphidia distincta*, genitalia, and superior piece from above.
7. *Raphidia adnixa*, genitalia.
8. *Raphidia arizonica*, genitalia.
9. *Raphidia bicolor*, genitalia.
10. *Raphidia minuta*, apical part of fore wing.
11. *Bittacus arizonica*, genitalia from above.
12. *Bittacus arizonica*, genitalia, side.
13. *Chrysopa pleuralis*, pleura.
14. *Chrysopa furcata*, face.
15. *Symphorobius californicus*, genitalia.
16. *Theliopsyche parva*, wings, vertex, and genitalia.
17. *Phanopsyche grisea*, wings.
18. *Schizopelex lobata*, genitalia.
19. *Phanopsyche grisea*, head.
20. *Schizopelex lobata*, genitalia.
21. *Mormomyia unicolor*, genitalia.
22. *Phanopsyche grisea*, genitalia.
23. *Glossosoma nigrior*, genitalia.
24. *Rhyacophila luctuosa*, genitalia.
25. *Stenopsyche calypso*, genitalia.
26. *Rhyacophila basalis*, genitalia.
27. *Rhyacophila grandis*, genitalia.
28. *Notiopsyche carolina*, genitalia.
29. *Rhyacophila angelita*, genitalia.
30. *Isoperla bellona*, ventral plate.
31. *Rhyacophila carolina*, genitalia.
32. *Brachycentrus occidentalis*, genitalia from above.
33. *Diplectrona nigripennis*, above, and *D. modesta*, below—antennæ.
34. *Wormaldia plutonis*, genitalia.
35. *Perla slossonæ*, ventral plate.



BANKS ON NEUROPTERA.



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